



CASPAN
Engineers and Constructors
Houston, Texas

(NASA-CR-140239) SCREENING, CATALOGING AND INDEXING OF EARTH RESOURCE AIRCRAFT MISSIONS Final Report (Caspan Corp., Houston, Tex.) 8 p HC \$4.00 C5CL 05B	N74-32805 Unclas 48755
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Final Report
to
Johnson Spacecraft Center
for
Screening, Cataloging and Indexing
of Earth Resource Aircraft Missions

NAS 9-13604

September, 1974

CASPAN CORPORATION
Engineers and Constructors
Houston, Texas

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1.0 Background

Caspan Corporation was awarded a contract to Screen, Catalog and Index Remotely Sensed Imagery furnished by NASA for thirty aircraft missions. This work was to be done within a one year time period at the rate of approximately four missions per month. The missions were to be approximately fifty cans of film each, for a total of one thousand five hundred cans (1500).

The existing format and procedures were to be used with minor variations for peculiar situations or one-of-a-kind missions. The major change from previous procedures used was the routing of the Cataloging and Indexing Report to the mission manager before typing. This, in connection with closer relation between Caspan and the mission managers, was to eliminate errors before final preparation of the report.

Microfilm was to be used for the first time to prepare the Cataloging and Indexing Reports.

2.0 Accomplishments

Caspan screened, cataloged and indexed thirty Post 200 Earth Resources Aircraft Missions between September 1, 1973 and September 1, 1974. These thirty missions averaged 64.3 cans of film. The largest being Mission 258 with 173 cans and the smallest being Mission 276 with one can. This was a total of one thousand nine hundred twenty-nine cans (1,929) of film. This is four hundred twenty-nine cans of film more than requisite. Each can of film required an average of 7.3 manhours. The highest being Mission 246 at 43.9 manhours and the lowest being Mission 277 at 2.6 manhours. The manhours do not include time spent on revisions, paid vacations, holidays and sick leave. All this information is reflected in Figure 2.1.

Microfilm was used for twenty-seven of the thirty missions. This is the first time that microfilm copy has been used to Cataloging and Indexing of Aerial photography. Only one RC-8 and one multispectral camera film was reproduced on microfilm, which accelerated the task of matching frame numbers. The use of microfilm eliminated all of the laborers task of film handling and accelerated report preparation.

MISSION STATISTICAL DATA

	<u>Mission Number</u>	<u>Number of Cans</u>	<u>Rec'd. by Caspan</u>	<u>Manhours Per Can</u>	<u>Date Forwarded to Mission Manager</u>	<u>Date Sent to Kentron</u>	<u>Current Status</u>
1	207	74	Sep. 3, 1973	6.25	Oct. 1, 1973	Oct. 26, 1973	Published
2	216	40	Oct. 16, 1973	6.73	Nov. 2, 1973	Jan. 2, 1974	"
3	226	99	Sep. 15, 1973	4.48	Oct. 1, 1973	Oct. 26, 1973	"
4	227	29	Oct. 1, 1973	5.15	Oct. 24, 1973	Nov. 9, 1973	"
5	230	127	Oct. 1, 1973	5.07	Oct. 24, 1973	Mar. 27, 1974	"
6	235	99	Nov. 26, 1973	6.80	Dec. 19, 1973	Jan. 2, 1974	"
7	236	35	Sep. 3, 1973	5.25	Oct. 1, 1973	Nov. 2, 1973	"
8	237	44	Oct. 2, 1973	2.25	Nov. 2, 1973	Nov. 21, 1973	"
9	238	73	Nov. 1, 1973	5.20	Nov. 21, 1973	Jan. 4, 1974	"
10	239	72	Nov. 1, 1973	4.70	Nov. 26, 1973	Dec. 10, 1973	"
11	246	2	Feb. 20, 1974	43.90	May 24, 1974	May 30, 1974	"
12	247	183	Jan. 2, 1974	6.44	Feb. 21, 1974	Mar. 22, 1974	D.N.A.
13	248	152	Dec. 21, 1973	8.48	Feb. 6, 1974	Mar. 6, 1974	Published
14	249	102	Feb. 5, 1974	3.35	Feb. 28, 1974	May 30, 1974	"
15	253	136	Feb. 27, 1974	5.70	Mar. 27, 1974	Apr. 17, 1974	"
16	258	173	Mar. 25, 1974	4.00	May 24, 1974	July 1, 1974	D.N.A.
17	259	119	Apr. 17, 1974	6.80	June 7, 1974	June 17, 1974	Published
18	260	72	May 9, 1974	4.70	June 7, 1974	June 17, 1974	D.N.A.
19	261	49	May 9, 1974	6.05	June 11, 1974	June 17, 1974	"
20	265	6	June 7, 1974	5.60	June 21, 1974	June 27, 1974	Published
21	268	40	June 11, 1974	4.50	July 1, 1974	July 9, 1974	D.N.A.
22	270	10	June 18, 1974	6.40	July 1, 1974	July 9, 1974	Published
23	271	95	July 8, 1974	3.70	Aug. 2, 1974	Aug. 6, 1974	D.N.A.
24	272	18	June 28, 1974	3.67	July 9, 1974	July 19, 1974	"
25	273	46	July 8, 1974	4.09	July 30, 1974	Aug. 2, 1974	"
26	274	11	June 28, 1974	9.64	July 9, 1974	D.N.A.	Published
27	275	4	Aug. 5, 1974	25.10	Aug. 13, 1974	"	D.N.A.
28	276	1	Aug. 19, 1974	D.N.A.	Aug. 28, 1974	"	"
29	277	8	May 31, 1974	2.60	June 7, 1974	June 17, 1974	Published
30	278	10	July 31, 1974	12.35	Aug. 6, 1974	D.N.A.	D.N.A.
		<u>1929</u>		<u>7.30</u>			

2-2

Figure 2.1

3.0 Problems

Difficulties arising during the contract were of the aggravating nature rather than major problems. The foremost of the problems was lack of a mission report at the time of the preparation of the Cataloging and Indexing Report. The lack of a mission report and the unavailability of a mission manager, when he was out-of-town on another mission, caused several hours of additional research by the team leaders.

The second problem is the darkness or opaqueness of film types 2443 and 2402 when microfilmed. This opaqueness masked film titling and details needed in preparation of the plot.

Another problem was the turn around time by Kodak and Photo Lab in preparing the microfilm. This caused a severe slow down in production, and on two occasions, a complete stop.

The microfilm readers performed will be for the period of the contract. One machine jammed from a bad film leader which probably caused the clutch to fail two days later. The other machine had rheostat problems for a month and finally the rheostat had to be replaced.

These problems were minor when looked at over a period of the contract and caused no major delays.

4.0 Conclusions and Recommendations

A Cataloging and Indexing Report of remote sensor data can be prepared on a timely basis for a relatively low cost from microfilm. The reports required less than thirty days when all data was available. The average unit cost for each report was less than one thousand seven hundred dollars (\$1,700.00), excluding printing. The preparation of the reports was no way handicapped by microfilm, but enhanced by its use.

We feel that the methods and procedures used in this contract are close to ideal. We recommend the continued use of microfilm for any future manual cataloging and indexing of remote sensor imagery.

A procedure needs to be established to relieve the mission manager of the bulk of writing the Mission Report. This report needs to be timely and available when the microfilm is ready. Not only does it need to be written faster, but printed and disseminated faster.

We further recommend a different or improved method be used for microfilming film type 2443 and 2402. The opaqueness of the microfilm makes it extremely hard to read frame titling, causing the user to count frames to determine frame numbers. Much of the detail of the imagery is also lost in the darkness.